

Monsanto

Monsanto Company
Corporate Engineering Department
Savage, Illinois 62201

October 11, 1985
MC/JSA Letter #10

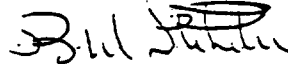
J.S. Alberici Construction Company
W.C. Koester

Subject: Testing 42" Pipe - CEA 3808 South Trunk Sewer

Alberici recently has tested 42" piping prior to full cure of the joint material. This procedure is outside of the project specifications and can not be accepted by Monsanto. Without full curing of the joint material the final integrity of the joint can not be ensured.

Project specification 2-F5, (copy attached) paragraph 1.3 states that a Pre-Job Conference shall be held with the minutes of this meeting becoming a part of the specification. The Pre-Job Conference was held 1/22/85 and states "Cannot Hydro Test prior to total curing" (Paragraph F, Item 1).

Hydro Testing prior to total curing of the joint material will be sufficient reason to assume the curing of the joint has been stopped and will subject Alberici to costs for removal and replacement of such joints. Piping currently installed between manholes 2-AA and 2-BB have been tested prior to full cure of the joint material and are subject to final acceptance by Monsanto.



B.W. Steketee
Site Construction Manager

BWS/acg
attachment

CC:	D. Bowers	CS6G
	L. Kreh	F2ED
	G. Grundmann	CS6G
	K. Lichtenheld	CS6G
	R. Martini	1740
	K. Petterson	1740
	O. Shipley	1740
	L. Bumbicka	1740
	R. Nelson	1740
	C. Lotz	Alberici

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MONSANTO

From: Gordon A. Grundmann CS6G Corporate Engineering (4-6112)

Date: January 23, 1985

cc: D.R. Bowers CS6G

Subj: Pre-Job Conference

L.V. Bumbicka 1740

R.M. Calles CS6G

M.A. Coco Alberici

Re: CEA 3808 - Main S. Trunk Sewer

E.R. Hartman CS6G

L.C. Kreh F2ED

TO: W. Bodine Alberici

F.A. Mayse CS6G

T. Carrico 1740

R.J. Murphy 1740

W. Franke Pennwalt

R.L. Wiese CS6G

J. Imrie Imrie Sales

R. Knoll Fleischer Seeger

W. Koester Alberici

K. Lichtenheld CS6G

C. Lotz Alberici

R. Nelson 1740

K. Petterson 1740

L. Sheppard Pennwalt

O. Shipley 1740

A pre-job conference was held at the construction trailers at 9:00 a.m. on 01/22/85 to discuss membranes and acid brick details for the manholes on the project. Most of the details discussed in the meeting are part of the project specifications and are not covered in this memo. The details summarized below primarily cover additional clarification or emphasis on portions of the specifications:

A. Cast In-Place Concrete Manholes

1. Sheppard noted that it is often worthwhile to check the actual chute operator at the concrete supplier to ensure they are furnishing the proper mix.
2. Any voids that can be seen visually in the concrete surface need to be repaired prior to membrane installation. The patch mix per the specifications is 2-parts sand to 1-part Portland cement. (The mix stated in the meeting was not per the specifications).
3. All of the moisture must be out of the concrete walls before applying the membrane. This is also true after hydro test.

B. Asphalt Membrane System

1. Apply when the temperature is over 40°F.
2. The hot asphalt is approximately 360°F during application. This presents a burn hazard which means that safety measures must be taken here.

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3. A primer is first applied over the entire surface. It is important that the surface be thoroughly covered.
4. The layers of asphalt are applied from the bottom up. The squeegee used is usually wood or masonite.
5. The fiberglass cloth is applied starting at the top.
6. The asphalt thickness is 1/4". The reason for not getting too great a thickness of asphalt is that the material has the capability to flow and could break the bond of the bricks at some future time.

C. Furan Resin Membrane System

1. The furan and substrate must be 60°F minimum regardless of the air temperature.
2. A maximum of 80°F for installation is suggested because the working life of the furan above this temperature gets very short.
3. The white glass sheathing cloth must be worked into the mortar until it is entirely black (the color of the mortar).
4. Curing times are specified, but work should not proceed if a knife point can be pushed into the furan. If it can, then the furan has not completed its curing.

D. Acid Brick

1. The surface temperature of the brick must be 60°F minimum. This means pallets of brick must be restacked after receiving in a checker-board fashion to ensure that the inner bricks are at the proper temperature. Ventilation is required under the brick so it does not absorb moisture from the ground. The guideline temperature for laying brick is 60°-80°F. The mortar temperature has the same guidelines. If the temperature is above 80°F up to a maximum of 90°F, the bricklayer must lay the brick very quickly and this increases the risk of the mortar hardening before the bricks can be properly laid.
2. Monsanto will furnish the power for heating and refrigerating units to either heat or cool the brick as required.

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3. When mixing the furan, mix the power into the liquid to avoid lumping (as opposed to the reverse). Spread mortar out to prevent deep mixes or there is the ultimate possibility of the mix catching on fire.
4. When a brick is placed, mortar must be extruded all around. This ensures full joints.
5. Bricks are not all that uniform, and the bricklayer must choose his bricks to obtain the nominal 1/8" thick joint.
6. After the brick is installed, 8-days of curing at 70°F are required.
7. Double-buttering is required on the brickwork.
8. The joint design recommended by R. Knoll has been accepted. Knoll to resubmit drawings for approval.

E. General

1. All materials to be used for the membranes and brickwork have been approved.
2. It was clearly stated that all this work must be executed strictly in accordance with the specifications. Any revisions must be cleared and approved by Monsanto.
3. R. Knoll intends to use the same personnel for the entire project. This would include: Rich Schlereth of Fleischer Seeger who will periodically check the progress of the job, a brick foreman (on the job all the time), one or two bricklayers, and a laborer.
4. The next seminar, which will be held specifically for the craftsmen who will do the work, is expected to take place in early March.
5. Sheppard is sending Grundmann inspection guidelines which will be distributed.


F. Furan Joints on 42" Pipe

1. Cannot hydro test prior to total curing. If water penetrates the furan, it will stop the cure.
2. Shutdown of work in the trench due to benzene safety concerns caused concern over the curing of two joints. Curing will start if the pipe itself (not just the air) is at 55°-60°F. It is okay to restart a cure if it has to be stopped.

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If a cure never did start because of too low a temperature, and more than four-days elapses, then the joint must be redone since the furan will not ultimately reach proper strength after a delay of this length of time. The two joints questioned were at sufficient temperature when the work was shut down due to benzene safety concerns, and they are okay since the cure had started. Loss of bonding is the concern with starting the cure too late. If you could scrape the furan off the pipe with a knife, then the bonding was improper.

3. Alberici is considering placing a bag enclosure around the outside of the pipe to localize the heating. Guidelines were established. Ideally the temperature inside the pipe and outside should be the same. A 10°F differential is acceptable. More than 10°F differential up to 20°F absolute maximum is marginally acceptable, but not recommended. Sheppard suggested the possible use of tarps over the pipe alongside the joints to help minimize the loss of heat through the pipe walls.


Gordon A. Grundmann

mb/0048C

WGX 4084534

CEA 3806
W.G. Krummrich
Sauget, IL YARD CHEMICAL SEWERS - CLAY PIPE
8657Y

Spec 2F-5
Date 2/6/84
Rev 0

1. GENERAL

1.1 Scope This specification covers materials and methods of constructing gravity sewers for chemical drainage. The sewers, manholes, inlets and other appurtenances shall be constructed to the dimensions, lines and invert elevations shown on the drawings.

1.2 Related Work Specified Elsewhere

Earthwork	Spec 3E-1
Cast-In-Place Concrete	Spec 3E-1
Chemical Resistant Brickwork	Spec 4D-1
Trench Pipe Bedding and Encasement	A8.2 STD 9
Yard Chemical Sewers	A8.2 STD 21

1.3 Pre-job Conference

Prior to starting any pipe joint work, all installation foremen and workmen performing this work shall be trained by a training representative of the manufacturer of the chemical resistant joint materials. The Field Engineer and/or a Monsanto representative shall be in attendance at this meeting. Minutes of this conference will be taken, agreed to by all attendees, and become a part of this Specification.

1.4 Job Experience This Contractor shall show written evidence of the successful completion of three jobs within the last five years similar to this work.

1.5 Product Delivery, Storage, and Handling

Joint cements, asbestos roving, mortar, aggregates, etc., shall be stored so that they may be maintained in a dry condition. Storage temperature limitations stated by manufacturers shall be observed.

Do not drop or roughly handle the pipe and fittings.

Provide platforms or dunnage so materials are not stored on the ground.

2. PRODUCTS

2.1 Clay Pipe Extra strength clay pipe and fittings shall be specially tested and selected pieces that conform to ASTM C-700 and additionally as follows:

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